



## SEQUENCE LISTING

<110> Luche, Ralf M.  
Wei, Bo

<120> DSP-15 DUAL-SPECIFICITY PHOSPHATASE

<130> 200125.433

<140> US 09/955,732  
<141> 2001-09-18

<160> 29

<170> FastSEQ for Windows Version 4.0

<210> 1  
<211> 1980  
<212> DNA  
<213> Homo sapiens

<400> 1

atggccctgg	tcacagttag	cggttcgccc	ccgggcagcg	gcgcctccac	gcccggtggg	60
ccttggacc	aggcggtcca	gcgaaggagt	cgactccagc	gaaggcagag	ctttcggtg	120
ctccgtgggg	ctgtcctggg	actgcaggat	ggaggggaca	atgtatgtgc	agcagaggcc	180
agttctgagc	caacagagaa	ggcccccagt	gaggaggagc	tccacgggga	ccagacagac	240
ttcgggcaag	gatcccgag	tccccagaag	caggaggagc	agaggcagca	cctgcaccc	300
atggtaacgc	tgctgaggcc	gcaggatgac	atccgcctgg	cagcccagt	ggaggcaccc	360
cggcctccccc	ggctccgcta	cctgctggta	gtttctacac	gagaaggaga	aggctctgagc	420
caggatgaga	cggtcctcct	gggcgtggat	ttccctgaca	gcagtcctcc	cagctgcacc	480
ctggggctgg	tcttggccct	ctggagtgac	acccagggtt	acttagatgg	agacgggggc	540
ttcagcgtga	cgtctgggtg	gcaaagccgg	atcttcaagc	ccatctccat	ccagaccatg	600
tgggccacac	tccaggtatt	gcaccaagca	tgtgaggcag	ctctaggcag	cggcctgtta	660
ccgggtggca	gtgccttcac	ctgggcccagc	cactaccagg	agagactgaa	ctccgaacag	720
actgcctca	atgagtggac	ggctatggcc	gacctggagt	ctctgcggcc	tcccagcgcc	780
gaggcctggcg	ggtcctcaga	acaggagcag	atggagcagg	cgatccgtgc	tgagctgtgg	840
aaagtgttgg	atgtcagtga	cctggagagt	gtcacttcca	aagagatccg	ccaggtctg	900
gagctgcgcc	tggggctccc	cctccagcag	taccgtgact	tcatcgacaa	ccagatgtcg	960
ctgctgggtgg	cacagggga	ccgagcctcc	cgcacatttcc	cccacctcta	cctgggctca	1020
gagtggaaacg	cagcaaacct	ggaggagctg	cagaggaaca	gggtcaccca	catcttgaac	1080
atggcccggg	agattgacaa	cttctaccct	gagcgttca	cctaccacaa	tgtgcgcctc	1140
tggatgagg	agtgcggcca	gctgctgcgg	cactggaaagg	agacgcaccc	cttcattgag	1200
gctgcaagag	cacagggcac	ccacgtgctg	gtccactgca	agatgggcgt	cagccgctca	1260
gcggccacag	tgctgccta	tgccatgaag	cagtacgaat	gcagcctgga	gcaggccctg	1320
cggccacgtgc	aggagctccg	gcccatcgcc	cgccccaaacc	ctggcttct	gcgcacgtg	1380
cagatctacc	agggcatct	gacggccagc	cgccagagcc	atgtctggg	gcagaaagt	1440
ggtggggctct	ccccagagga	gcacccagcc	cctgaagtct	ctacaccatt	cccacctctt	1500
ccggccagaac	ctgagggtgg	tggggaggag	aagggtgtag	gcatgaaaga	gagccaggca	1560
gcggccaaag	aaggcctgg	gccacggcca	cgtataaacc	tccgagggt	catgagggtcc	1620
atcagtcttc	tggagccctc	cttggagctg	gagagcacct	cagagaccag	tgacatgcca	1680
gaggctttct	cttcccacga	gtcttcacat	gaagagcctc	tgccagccctt	cccacagctt	1740
gcaaggacca	agggaggcca	gcaggtggac	agggggcctc	agcctgcct	gaagtcccgc	1800
cagtcaagtgg	ttaccctcca	gggcagtgcc	gtgggtggca	accggaccct	gcccttccag	1860
gagcaggagc	aggggcagggg	gcagggggcag	ggagagccct	gcatttcctc	tacgcccagg	1920
ttccggaagg	tggtgagaca	ggccagcgtg	catgacagtg	gagaggaggg	cgaggcctga	1980

<210> 2  
 <211> 659  
 <212> PRT  
 <213> Homo sapiens

<400> 2  
 Met Ala Leu Val Thr Val Ser Arg Ser Pro Pro Gly Ser Gly Ala Ser  
   1               5                 10                 15  
 Thr Pro Val Gly Pro Trp Asp Gln Ala Val Gln Arg Arg Ser Arg Leu  
   20              25                 30  
 Gln Arg Arg Gln Ser Phe Ala Val Leu Arg Gly Ala Val Leu Gly Leu  
   35              40                 45  
 Gln Asp Gly Gly Asp Asn Asp Asp Ala Ala Glu Ala Ser Ser Glu Pro  
   50              55                 60  
 Thr Glu Lys Ala Pro Ser Glu Glu Glu Leu His Gly Asp Gln Thr Asp  
   65              70                 75                 80  
 Phe Gly Gln Gly Ser Gln Ser Pro Gln Lys Gln Glu Glu Gln Arg Gln  
   85              90                 95  
 His Leu His Leu Met Val Gln Leu Leu Arg Pro Gln Asp Asp Ile Arg  
   100            105                110  
 Leu Ala Ala Gln Leu Glu Ala Pro Arg Pro Pro Arg Leu Arg Tyr Leu  
   115            120                125  
 Leu Val Val Ser Thr Arg Glu Gly Glu Gly Leu Ser Gln Asp Glu Thr  
   130            135                140  
 Val Leu Leu Gly Val Asp Phe Pro Asp Ser Ser Pro Ser Cys Thr  
   145            150                155                160  
 Leu Gly Leu Val Leu Pro Leu Trp Ser Asp Thr Gln Val Tyr Leu Asp  
   165            170                175  
 Gly Asp Gly Gly Phe Ser Val Thr Ser Gly Gly Gln Ser Arg Ile Phe  
   180            185                190  
 Lys Pro Ile Ser Ile Gln Thr Met Trp Ala Thr Leu Gln Val Leu His  
   195            200                205  
 Gln Ala Cys Glu Ala Ala Leu Gly Ser Gly Leu Val Pro Gly Gly Ser  
   210            215                220  
 Ala Leu Thr Trp Ala Ser His Tyr Gln Glu Arg Leu Asn Ser Glu Gln  
   225            230                235                240  
 Ser Cys Leu Asn Glu Trp Thr Ala Met Ala Asp Leu Glu Ser Leu Arg  
   245            250                255  
 Pro Pro Ser Ala Glu Pro Gly Gly Ser Ser Glu Gln Glu Gln Met Glu  
   260            265                270  
 Gln Ala Ile Arg Ala Glu Leu Trp Lys Val Leu Asp Val Ser Asp Leu  
   275            280                285  
 Glu Ser Val Thr Ser Lys Glu Ile Arg Gln Ala Leu Glu Leu Arg Leu  
   290            295                300  
 Gly Leu Pro Leu Gln Gln Tyr Arg Asp Phe Ile Asp Asn Gln Met Leu  
   305            310                315                320  
 Leu Leu Val Ala Gln Arg Asp Arg Ala Ser Arg Ile Phe Pro His Leu  
   325            330                335  
 Tyr Leu Gly Ser Glu Trp Asn Ala Ala Asn Leu Glu Glu Leu Gln Arg  
   340            345                350  
 Asn Arg Val Thr His Ile Leu Asn Met Ala Arg Glu Ile Asp Asn Phe  
   355            360                365  
 Tyr Pro Glu Arg Phe Thr Tyr His Asn Val Arg Leu Trp Asp Glu Glu  
   370            375                380  
 Ser Ala Gln Leu Leu Pro His Trp Lys Glu Thr His Arg Phe Ile Glu

385	390	395	400
Ala Ala Arg Ala Gln Gly Thr His Val Leu Val His Cys Lys Met Gly			
405	410	415	
Val Ser Arg Ser Ala Ala Thr Val Leu Ala Tyr Ala Met Lys Gln Tyr			
420	425	430	
Glu Cys Ser Leu Glu Gln Ala Leu Arg His Val Gln Glu Leu Arg Pro			
435	440	445	
Ile Ala Arg Pro Asn Pro Gly Phe Leu Arg Gln Leu Gln Ile Tyr Gln			
450	455	460	
Gly Ile Leu Thr Ala Ser Arg Gln Ser His Val Trp Glu Gln Lys Val			
465	470	475	480
Gly Gly Val Ser Pro Glu Glu His Pro Ala Pro Glu Val Ser Thr Pro			
485	490	495	
Phe Pro Pro Leu Pro Pro Glu Pro Glu Gly Gly Glu Glu Lys Val			
500	505	510	
Val Gly Met Glu Glu Ser Gln Ala Ala Pro Lys Glu Glu Pro Gly Pro			
515	520	525	
Arg Pro Arg Ile Asn Leu Arg Gly Val Met Arg Ser Ile Ser Leu Leu			
530	535	540	
Glu Pro Ser Leu Glu Leu Glu Ser Thr Ser Glu Thr Ser Asp Met Pro			
545	550	555	560
Glu Val Phe Ser Ser His Glu Ser Ser His Glu Glu Pro Leu Gln Pro			
565	570	575	
Phe Pro Gln Leu Ala Arg Thr Lys Gly Gly Gln Gln Val Asp Arg Gly			
580	585	590	
Pro Gln Pro Ala Leu Lys Ser Arg Gln Ser Val Val Thr Leu Gln Gly			
595	600	605	
Ser Ala Val Val Ala Asn Arg Thr Gln Ala Phe Gln Glu Gln Glu Gln			
610	615	620	
Gly Gln Gly Gln Gly Gln Gly Glu Pro Cys Ile Ser Ser Thr Pro Arg			
625	630	635	640
Phe Arg Lys Val Val Arg Gln Ala Ser Val His Asp Ser Gly Glu Glu			
645	650	655	
Gly Glu Ala			

<210> 3  
<211> 156  
<212> PRT  
<213> Homo sapiens

<400> 3			
Asp Gly Ser Pro Leu Ser Asn Ser Gln Pro Ser Phe Pro Val Glu Ile			
1	5	10	15
Leu Pro Phe Leu Tyr Leu Gly Cys Ala Lys Asp Ser Thr Asn Leu Asp			
20	25	30	
Val Leu Glu Glu Phe Gly Ile Lys Tyr Ile Leu Asn Val Thr Pro Asn			
35	40	45	
Leu Pro Asn Leu Phe Glu Asn Ala Gly Glu Phe Lys Tyr Lys Gln Ile			
50	55	60	
Pro Ile Ser Asp His Trp Ser Gln Asn Leu Ser Gln Phe Phe Pro Glu			
65	70	75	80
Ala Ile Ser Phe Ile Asp Glu Ala Arg Gly Lys Asn Cys Gly Val Leu			
85	90	95	
Val His Cys Leu Ala Gly Ile Ser Arg Ser Val Thr Val Thr Val Ala			
100	105	110	

Tyr	Leu	Met	Gln	Lys	Leu	Asn	Leu	Ser	Met	Asn	Asp	Ala	Tyr	Asp	Ile
115							120						125		
Val	Lys	Met	Lys	Lys	Ser	Asn	Ile	Ser	Pro	Asn	Phe	Asn	Phe	Met	Gly
130							135						140		
Gln	Leu	Leu	Asp	Phe	Glu	Arg	Thr	Leu	Gly	Leu	Ser				
145							150						155		

<210> 4  
<211> 156  
<212> PRT  
<213> Homo sapiens

<400> 4															
Asp	Gly	Ser	Pro	Val	Pro	Ser	Ser	Gln	Pro	Ala	Phe	Pro	Val	Gln	Ile
1				5					10					15	
Leu	Pro	Tyr	Leu	Tyr	Leu	Gly	Cys	Ala	Lys	Asp	Ser	Thr	Asn	Leu	Asp
20									25					30	
Val	Leu	Gly	Lys	Tyr	Gly	Ile	Lys	Tyr	Ile	Leu	Asn	Val	Thr	Pro	Asn
35								40					45		
Leu	Pro	Asn	Ala	Phe	Glu	His	Gly	Gly	Glu	Phe	Thr	Tyr	Lys	Gln	Ile
50							55				60				
Pro	Ile	Ser	Asp	His	Trp	Ser	Gln	Asn	Leu	Ser	Gln	Phe	Phe	Pro	Glu
65							70				75			80	
Ala	Ile	Ser	Phe	Ile	Asp	Glu	Ala	Arg	Ser	Lys	Lys	Cys	Gly	Val	Leu
85								90					95		
Val	His	Cys	Leu	Ala	Gly	Ile	Ser	Arg	Ser	Val	Thr	Val	Thr	Val	Ala
100								105					110		
Tyr	Leu	Met	Gln	Lys	Met	Asn	Leu	Ser	Leu	Asn	Asp	Ala	Tyr	Asp	Phe
115							120						125		
Val	Lys	Arg	Lys	Lys	Ser	Asn	Ile	Ser	Pro	Asn	Phe	Asn	Phe	Met	Gly
130							135						140		
Gln	Leu	Leu	Asp	Phe	Glu	Arg	Thr	Leu	Gly	Leu	Ser				
145							150						155		

<210> 5  
<211> 156  
<212> PRT  
<213> Homo sapiens

<400> 5															
Ala	Thr	Pro	Pro	Pro	Val	Gly	Leu	Arg	Ala	Ser	Phe	Pro	Val	Gln	Ile
1							5				10			15	
Leu	Pro	Asn	Leu	Tyr	Leu	Gly	Ser	Ala	Arg	Asp	Ser	Ala	Asn	Leu	Glu
20								25					30		
Ser	Leu	Ala	Lys	Leu	Gly	Ile	Arg	Tyr	Ile	Leu	Asn	Val	Thr	Pro	Asn
35								40					45		
Leu	Pro	Asn	Phe	Phe	Glu	Lys	Asn	Gly	Asp	Phe	His	Tyr	Lys	Gln	Ile
50							55				60				
Pro	Ile	Ser	Asp	His	Trp	Ser	Gln	Asn	Leu	Ser	Arg	Phe	Phe	Pro	Glu
65							70				75			80	
Ala	Ile	Glu	Phe	Ile	Asp	Glu	Ala	Leu	Ser	Gln	Asn	Cys	Gly	Val	Leu
85								90					95		
Val	His	Cys	Leu	Ala	Gly	Val	Ser	Arg	Ser	Val	Thr	Val	Thr	Val	Ala
100								105					110		
Tyr	Leu	Met	Gln	Leu	His	Leu	Ser	Leu	Asn	Ala	Tyr	Asp	Leu		

115	120	125
Val Lys Arg Lys Lys Ser Asn Ile Ser Pro Asn Phe Asn Phe Met Gly		
130	135	140
Gln Leu Leu Asp Phe Glu Arg Ser Leu Arg Leu Glu		
145	150	155

<210> 6  
<211> 155  
<212> PRT  
<213> Homo sapiens

<400> 6		
Leu Ser Gln Pro Cys Leu Pro Val Pro Ser Val Gly Leu Thr Arg Ile		
1	5	10
Leu Pro His Leu Tyr Leu Gly Ser Gln Lys Asp Val Leu Asn Lys Asp		
20	25	30
Leu Met Thr Gln Asn Gly Ile Ser Tyr Val Leu Asn Ala Ser Asn Ser		
35	40	45
Cys Pro Lys Pro Asp Phe Ile Cys Glu Ser Arg Phe Met Arg Val Pro		
50	55	60
Ile Asn Asp Asn Tyr Cys Glu Lys Leu Leu Pro Trp Leu Asp Lys Ser		
65	70	75
Ile Glu Phe Ile Asp Lys Ala Lys Leu Ser Ser Cys Gln Val Ile Val		
85	90	95
His Cys Leu Ala Gly Ile Ser Arg Ser Ala Thr Ile Ala Ile Ala Tyr		
100	105	110
Ile Met Lys Thr Met Gly Met Ser Ser Asp Asp Ala Tyr Arg Phe Val		
115	120	125
Lys Asp Arg Arg Pro Ser Ile Ser Pro Asn Phe Asn Phe Leu Gly Gln		
130	135	140
Leu Leu Glu Tyr Glu Arg Thr Leu Lys Leu Leu		
145	150	155

<210> 7  
<211> 154  
<212> PRT  
<213> Homo sapiens

<400> 7		
Ser Asp Pro Arg Val Pro Ile Tyr Asp Gln Gly Gly Pro Val Glu Ile		
1	5	10
Leu Pro Tyr Leu Tyr Leu Gly Ser Cys Asn His Ser Ser Asp Leu Gln		
20	25	30
Gly Leu Gln Ala Cys Gly Ile Thr Ala Val Leu Asn Val Ser Ala Ser		
35	40	45
Cys Pro Asn His Phe Glu Gly Leu Phe His Tyr Lys Ser Ile Pro Val		
50	55	60
Glu Asp Asn Gln Met Val Glu Ile Ser Ala Trp Phe Gln Glu Ala Ile		
65	70	75
Ser Phe Ile Asp Ser Val Lys Asn Ser Gly Gly Arg Val Leu Val His		
85	90	95
Cys Gln Ala Gly Ile Ser Arg Ser Ala Thr Ile Cys Leu Ala Tyr Leu		
100	105	110
Ile Gln Ser His Arg Val Arg Leu Asp Glu Ala Phe Asp Phe Val Lys		
115	120	125

Gln	Arg	Arg	Gly	Val	Ile	Ser	Pro	Asn	Phe	Ser	Phe	Met	Gly	Gln	Leu
130						135						140			
Leu	Gln	Leu	Glu	Thr	Gln	Val	Leu	Cys	His						
145						150									

<210> 8  
<211> 154  
<212> PRT  
<213> Homo sapiens

<400>	8														
Ser	Ser	Cys	Ser	Thr	Pro	Leu	Tyr	Asp	Gln	Gly	Gly	Pro	Val	Glu	Ile
1				5					10					15	
Leu	Pro	Phe	Leu	Tyr	Leu	Gly	Ser	Ala	Tyr	His	Ala	Ser	Arg	Lys	Asp
				20				25						30	
Met	Leu	Asp	Ala	Leu	Gly	Ile	Thr	Ala	Leu	Ile	Asn	Val	Ser	Ala	Asn
				35				40					45		
Cys	Pro	Asn	His	Phe	Glu	Gly	His	Tyr	Gln	Tyr	Lys	Ser	Ile	Pro	Val
				50				55				60			
Glu	Asp	Asn	His	Lys	Ala	Asp	Ile	Ser	Ser	Trp	Phe	Asn	Glu	Ala	Ile
				65				70			75			80	
Asp	Phe	Ile	Asp	Ser	Ile	Lys	Asn	Ala	Gly	Gly	Arg	Val	Phe	Val	His
				85				90					95		
Cys	Gln	Ala	Gly	Ile	Ser	Arg	Ser	Ala	Thr	Ile	Cys	Leu	Ala	Tyr	Leu
				100				105					110		
Met	Arg	Thr	Asn	Arg	Val	Lys	Leu	Asp	Glu	Ala	Phe	Glu	Phe	Val	Lys
				115				120				125			
Gln	Arg	Arg	Ser	Ile	Ile	Ser	Pro	Asn	Phe	Ser	Phe	Met	Gly	Gln	Leu
				130				135				140			
Leu	Gln	Phe	Glu	Ser	Gln	Val	Leu	Ala	Pro						
				145				150							

<210> 9  
<211> 154  
<212> PRT  
<213> Homo sapiens

<400>	9														
Ser	Ser	Cys	Gly	Thr	Pro	Leu	His	Asp	Gln	Gly	Gly	Pro	Val	Glu	Ile
1				5					10					15	
Leu	Pro	Phe	Leu	Tyr	Leu	Gly	Ser	Ala	Tyr	His	Ala	Ala	Arg	Arg	Asp
				20				25					30		
Met	Leu	Asp	Ala	Leu	Gly	Ile	Thr	Ala	Leu	Leu	Asn	Val	Ser	Ser	Asp
				35				40					45		
Cys	Pro	Asn	His	Phe	Glu	Gly	His	Tyr	Gln	Tyr	Lys	Cys	Ile	Pro	Val
				50				55				60			
Glu	Asp	Asn	His	Lys	Ala	Asp	Ile	Ser	Ser	Trp	Phe	Met	Glu	Ala	Ile
				65				70			75			80	
Glu	Tyr	Ile	Asp	Ala	Val	Lys	Asp	Cys	Arg	Gly	Arg	Val	Leu	Val	His
				85				90					95		
Cys	Gln	Ala	Gly	Ile	Ser	Arg	Ser	Ala	Thr	Ile	Cys	Leu	Ala	Tyr	Leu
				100				105					110		
Met	Met	Lys	Lys	Arg	Val	Arg	Leu	Glu	Ala	Phe	Glu	Phe	Val	Lys	
				115				120				125			
Gln	Arg	Arg	Ser	Ile	Ile	Ser	Pro	Asn	Phe	Ser	Phe	Met	Gly	Gln	Leu

130	135	140
Leu Gln Phe Glu Ser Gln Val	Leu Ala Thr	
145	150	

<210> 10  
<211> 154  
<212> PRT  
<213> Homo sapiens

<400> 10			
Asn Val Ser Tyr Arg Pro Ala Tyr Asp Gln Gly Gly Pro Val Glu Ile			
1	5	10	15
Leu Pro Phe Leu Tyr Leu Gly Ser Ala Tyr His Ala Ser Lys Cys Glu			
20	25	30	
Phe Leu Ala Asn Leu His Ile Thr Ala Leu Leu Asn Val Ser Arg Arg			
35	40	45	
Thr Ser Glu Ala Cys Met Thr His Leu His Tyr Lys Trp Ile Pro Val			
50	55	60	
Glu Asp Ser His Thr Ala Asp Ile Ser Ser His Phe Gln Glu Ala Ile			
65	70	75	80
Asp Phe Ile Asp Cys Val Arg Glu Lys Gly Gly Lys Val Leu Val His			
85	90	95	
Cys Glu Ala Gly Ile Ser Arg Ser Pro Thr Ile Cys Met Ala Tyr Leu			
100	105	110	
Met Lys Thr Lys Gln Phe Arg Leu Lys Glu Ala Phe Asp Tyr Ile Lys			
115	120	125	
Gln Arg Arg Ser Met Val Ser Pro Asn Phe Gly Phe Met Gly Gln Leu			
130	135	140	
Leu Gln Tyr Glu Ser Glu Ile Leu Pro Ser			
145	150		

<210> 11  
<211> 163  
<212> PRT  
<213> Homo sapiens

<400> 11			
Asp Gly Ser Gly Cys Tyr Ser Leu Pro Ser Gln Pro Cys Asn Glu Val			
1	5	10	15
Thr Pro Arg Ile Tyr Val Gly Asn Ala Ser Val Ala Gln Asp Ile Pro			
20	25	30	
Lys Leu Gln Lys Leu Gly Ile Thr His Val Leu Asn Ala Ala Glu Gly			
35	40	45	
Arg Ser Phe Met His Val Asn Thr Asn Ala Asn Phe Tyr Lys Asp Ser			
50	55	60	
Gly Ile Thr Tyr Leu Gly Ile Lys Ala Asn Asp Thr Gln Glu Phe Asn			
65	70	75	80
Leu Ser Ala Tyr Phe Glu Arg Ala Ala Asp Phe Ile Asp Gln Ala Leu			
85	90	95	
Ala Gln Lys Asn Gly Arg Val Leu Val His Cys Arg Glu Gly Tyr Ser			
100	105	110	
Arg Ser Pro Thr Leu Val Ile Ala Tyr Leu Met Met Arg Gln Lys Met			
115	120	125	
Asp Val Lys Ser Ala Leu Ser Ile Val Arg Gln Asn Arg Glu Ile Gly			
130	135	140	

Pro Asn Asp Gly Phe Leu Ala Gln Leu Cys Gln Leu Asn Asp Arg Leu  
 145 150 155 160  
 Ala Lys Glu

<210> 12  
<211> 140  
<212> PRT  
<213> Homo sapiens

<400> 12  
Met Glu Gly Thr Met Met Gln Gln Arg Pro Val Leu Ser Gln Gln  
 1 5 10 15  
His Pro Ser Phe Ile Leu Asn Ser Ser Pro Ala His Ser Pro Met Ala  
 20 25 30  
Arg Glu Ile Asp Asn Phe Tyr Pro Glu Arg Phe Thr Tyr His Asn Val  
 35 40 45  
Arg Leu Trp Asp Glu Glu Ser Ala Gln Leu Leu Pro His Trp Lys Glu  
 50 55 60  
Thr His Arg Phe Ile Glu Ala Ala Arg Ala Gln Gly Thr His Val Leu  
 65 70 75 80  
Val His Cys Lys Met Gly Val Ser Arg Ser Ala Ala Thr Val Leu Ala  
 85 90 95  
Tyr Ala Met Lys Gln Tyr Glu Cys Ser Leu Glu Gln Ala Leu Arg His  
 100 105 110  
Val Gln Glu Leu Arg Pro Ile Ala Arg Pro Asn Pro Gly Phe Leu Arg  
 115 120 125  
Gln Leu Gln Ile Tyr Gln Gly Ile Leu Thr Ala Arg  
 130 135 140

<210> 13  
<211> 737  
<212> PRT  
<213> Drosophila melanogaster

<400> 13  
Gln Ser Glu Arg Arg Leu Ser Thr Asp Ser Thr Arg Ser Ser Asn Ser  
 1 5 10 15  
Thr Gln Ser Asn Asn Ser Asp Ile Gln Leu His Leu Gln Ser Met Phe  
 20 25 30  
Tyr Leu Leu Gln Arg Glu Asp Thr Leu Lys Met Ala Val Lys Leu Glu  
 35 40 45  
Ser Gln Arg Ser Asn Arg Thr Arg Tyr Leu Val Ile Ala Ser Arg Ser  
 50 55 60  
Cys Cys Arg Ser Gly Thr Ser Asp Arg Arg Arg His Arg Ile Met Arg  
 65 70 75 80  
His His Ser Val Lys Val Gly Gly Ser Ala Gly Thr Lys Ser Ser Thr  
 85 90 95  
Ser Pro Ala Val Pro Thr Gln Arg Gln Leu Ser Val Glu Gln Thr Ala  
 100 105 110  
Thr Glu Ala Ser Ser Lys Cys Asp Lys Thr Ala Asp Lys Glu Asn Ala  
 115 120 125  
Thr Ala Ala Gly Asp Asn Lys Asn Thr Ser Gly Met Glu Glu Ser Cys  
 130 135 140  
Leu Leu Gly Ile Asp Cys Asn Glu Arg Thr Thr Ile Gly Leu Val Val

145	150	155	160
Pro Ile Leu Ala Asp	Thr Thr Ile His	Leu Asp Gly Asp Gly	Gly Phe
165	170	175	
Ser Val Lys Val Tyr	Glu Lys Thr His	Ile Phe Lys Pro Val	Ser Val
180	185	190	
Gln Ala Met Trp Ser	Ala Leu Gln Thr	Leu His Lys Val	Ser Lys Lys
195	200	205	
Ala Arg Glu Asn Asn	Phe Tyr Ala Ser	Gly Pro Ser His	Asp Trp Leu
210	215	220	
Ser Ser Tyr Glu Arg Arg	Ile Glu Ser Asp	Gln Ser Cys	Leu Asn Glu
225	230	235	240
Trp Asn Ala Met Asp	Ala Leu Glu Ser	Arg Arg Pro Pro	Ser Pro Asp
245	250	255	
Ala Ile Arg Asn Lys	Pro Pro Glu Lys	Glu Thr Glu	Ser Val Ile
260	265	270	
Lys Met Lys Leu Lys	Ala Ile Met Met	Ser Val Asp	Leu Asp Glu Val
275	280	285	
Thr Ser Lys Tyr Ile Arg	Gly Arg Leu Glu Glu	Ile Leu Asp	Met Asp
290	295	300	
Leu Gly Glu Tyr Lys	Ser Phe Ile Asp	Ala Glu Met	Leu Val Ile Leu
305	310	315	320
Gly Gln Met Asp Ala Pro	Thr Lys Ile Phe	Glu His Val	Tyr Leu Gly
325	330	335	
Ser Glu Trp Asn Ala Ser	Asn Leu Glu	Leu Gln Lys	Asn Gly Val
340	345	350	
Arg His Ile Leu Asn Val	Thr Arg Glu	Ile Asp Asn	Phe Phe Pro Gly
355	360	365	
Thr Phe Glu Tyr Phe Asn	Val Arg Val	Tyr Asp Asp	Glu Lys Thr Asn
370	375	380	
Leu Leu Lys Tyr Trp	Asp Asp Thr Phe	Arg Tyr Ile	Thr Arg Ala Lys
385	390	395	400
Ala Glu Gly Ser Lys	Val Leu Val His	Cys Lys Met	Gly Val Ser Arg
405	410	415	
Ser Ala Ser Val Val	Ile Ala Tyr	Ala Met Lys	Tyr Gln Trp Glu
420	425	430	
Phe Gln Gln Ala Leu	Glu His Val	Lys Lys Arg Arg	Ser Cys Ile Lys
435	440	445	
Pro Asn Lys Asn Phe	Leu Asn Gln	Leu Glu Thr	Tyr Ser Gly Met Leu
450	455	460	
Asp Ala Met Lys Asn	Lys Glu Lys	Leu Gln Arg	Ser Lys Ser Glu Thr
465	470	475	480
Asn Leu Lys Ser Thr	Lys Asp Ala Arg	Leu Leu Pro	Gly Ser Glu Pro
485	490	495	
Thr Pro Leu Ile Gln	Ala Leu Asn	Gln Ala Lys	Ser Thr Gly
500	505	510	
Glu Ala Gly Val Thr	Pro Asp Gly	Glu Glu Asp	Gly Ser Arg Met
515	520	525	
His Arg Arg Ser Ile	Ala Gln Lys	Ser Gln Arg	Arg Met Val Arg Arg
530	535	540	
Ser Ser Ser Thr Ser	Pro Lys Thr	Gln Thr Ala Val	Val Thr Lys Gln
545	550	555	560
Gln Ser Gln Ser Met	Glu Asn Leu	Thr Pro Glu	Arg Ser Val Ala Glu
565	570	575	
Glu Pro Lys Asn Met	Arg Phe Pro	Gly Ser Asn	Gly Glu Asn Tyr Ser
580	585	590	
Val Thr Gln Asn Gln	Val Leu His	Ile Gln Lys	His Thr Pro Leu Ser
595	600	605	

Val Arg Thr Arg Ile His Asp Leu Glu Ala His Arg Ala Asp Gln Leu  
 610 615 620  
 Pro Gln Gln Pro Val Trp Thr Ser Leu Thr Lys Leu Ile Thr Gln Thr  
 625 630 635 640  
 Ser His Leu Gly Lys Ser Val Ser Gly Ser Ser Ser Gly Asn Ile Asp  
 645 650 655  
 Ser Arg Arg Asp Ser Ser Cys Ser Asp Val Phe Ser Ser Gln Val Asp  
 660 665 670  
 Ser Val Phe Ala Lys Asp Glu Gly Glu Lys Arg Gln Arg Arg Lys Thr  
 675 680 685  
 His Ser Trp Thr Glu Ser Leu Gly Pro Ser Gly Gly Ile Val Leu Asp  
 690 695 700  
 Pro Thr Pro Gln Gln Lys Gln Gln Ser Asn Ala Ile Leu Arg Pro  
 705 710 715 720  
 Arg Gly Thr Arg Gln Arg Glu Leu Pro Ser Arg His Ala Ser Trp Gly  
 725 730 735  
 Ser

<210> 14  
 <211> 509  
 <212> PRT  
 <213> Homo sapiens

<400> 14  
 Met Thr Leu Ser Thr Leu Ala Arg Lys Arg Lys Ala Pro Leu Ala Cys  
 1 5 10 15  
 Thr Cys Ser Leu Gly Gly Pro Asp Met Ile Pro Tyr Phe Ser Ala Asn  
 20 25 30  
 Ala Val Ile Ser Gln Asn Ala Ile Asn Gln Leu Ile Ser Glu Ser Phe  
 35 40 45  
 Leu Thr Val Lys Gly Ala Ala Leu Phe Leu Pro Arg Gly Asn Gly Ser  
 50 55 60  
 Ser Thr Pro Arg Ile Ser His Arg Arg Asn Lys His Ala Gly Asp Leu  
 65 70 75 80  
 Gln Gln His Leu Gln Ala Met Phe Ile Leu Leu Arg Pro Glu Asp Asn  
 85 90 95  
 Ile Arg Leu Ala Val Arg Leu Glu Ser Thr Tyr Gln Asn Arg Thr Arg  
 100 105 110  
 Tyr Met Val Val Val Ser Thr Asn Gly Arg Gln Asp Thr Glu Glu Ser  
 115 120 125  
 Ile Val Leu Gly Met Asp Phe Ser Ser Asn Asp Ser Ser Thr Cys Thr  
 130 135 140  
 Met Gly Leu Val Leu Pro Leu Trp Ser Asp Thr Leu Ile His Leu Asp  
 145 150 155 160  
 Gly Asp Gly Gly Phe Ser Val Ser Thr Asp Asn Arg Val His Ile Phe  
 165 170 175  
 Lys Pro Val Ser Val Gln Ala Met Trp Ser Ala Leu Gln Ser Leu His  
 180 185 190  
 Lys Ala Cys Glu Val Ala Arg Ala His Asn Tyr Tyr Pro Gly Ser Leu  
 195 200 205  
 Phe Leu Thr Trp Val Ser Tyr Tyr Glu Ser His Ile Asn Ser Asp Gln  
 210 215 220  
 Ser Ser Val Asn Glu Trp Asn Ala Met Gln Asp Val Gln Ser His Arg  
 225 230 235 240  
 Pro Asp Ser Pro Ala Leu Phe Thr Asp Ile Pro Thr Glu Arg Glu Arg

245	250	255
Thr Glu Arg Leu Ile Lys Thr Lys Leu Arg	Glu Ile Met Met	Gln Lys
260	265	270
Asp Leu Glu Asn Ile Thr Ser Lys Glu Ile Arg Thr	Glu Leu Glu Met	
275	280	285
Gln Met Val Cys Asn Leu Arg Glu Phe Lys Glu	Phe Ile Asp Asn Glu	
290	295	300
Met Ile Val Ile Leu Gly Gln Met Asp Ser	Pro Thr Gln Ile Phe Glu	
305	310	315
His Val Phe Leu Gly Ser Glu Trp Asn Ala	Ser Asn Leu Glu Asp Leu	
325	330	335
Gln Asn Arg Gly Val Arg Tyr Ile Leu Asn Val	Thr Arg Glu Ile Asp	
340	345	350
Asn Phe Phe Pro Gly Val Phe Glu Tyr His	Asn Ile Arg Val Tyr Asp	
355	360	365
Glu Glu Ala Thr Asp Leu Leu Ala Tyr Trp Asn	Asp Thr Tyr Lys Phe	
370	375	380
Ile Ser Lys Ala Lys Lys His Gly Ser Lys Cys	Leu Val His Cys Lys	
385	390	395
Met Gly Val Ser Arg Ser Ala Ser Thr Val	Ile Ala Tyr Ala Met Lys	
405	410	415
Glu Tyr Gly Trp Asn Leu Asp Arg Ala Tyr Asp	Tyr Val Lys Glu Arg	
420	425	430
Arg Thr Val Thr Lys Pro Asn Pro Ser Phe Met	Arg Gln Leu Glu Glu	
435	440	445
Tyr Gln Gly Ile Leu Leu Ala Ser Phe Leu Gly	Leu Ile His Gly Gly	
450	455	460
Arg Asp Lys Pro Trp Gly Glu Lys Ser Thr	Glu Phe Glu Ser Val Asp	
465	470	475
Leu Val Ser Ile Pro Gly Ser Pro Ser Cys	Cys Asn Pro Glu Lys Leu	
485	490	495
Leu His Ile Ser His Pro Tyr Leu Thr Pro Ser Ile	Lys	
500	505	

<210> 15  
<211> 552  
<212> PRT  
<213> Homo sapiens

<400> 15

Met Val Leu Arg Leu Trp Ser Asp Thr Lys Ile His	Leu Asp Gly Asp		
1	5	10	15
Gly Gly Phe Ser Val Ser Thr Ala Gly Arg Met	His Ile Phe Lys Pro		
20	25	30	
Val Ser Val Gln Ala Met Trp Ser Ala Leu Gln	Val Leu His Lys Ala		
35	40	45	
Cys Glu Val Ala Arg Arg His Asn Tyr Phe Pro	Gly Gly Val Ala Leu		
50	55	60	
Ile Trp Ala Thr Tyr Tyr Glu Ser Cys Ile Ser	Ser Glu Gln Ser Cys		
65	70	75	80
Ile Asn Glu Trp Asn Ala Met Gln Asp Leu Glu	Ser Thr Arg Pro Asp		
85	90	95	
Ser Pro Ala Leu Phe Val Asp Lys Pro Thr Glu	Gly Glu Arg Thr Glu		
100	105	110	
Arg Leu Ile Lys Ala Lys Leu Arg Ser Ile Met	Met Ser Gln Asp Leu		
115	120	125	

Glu Asn Val Thr Ser Lys Glu Ile Arg Asn Glu Leu Glu Lys Gln Met  
 130 135 140  
 Asn Cys Asn Leu Lys Glu Leu Lys Glu Phe Ile Asp Asn Glu Met Leu  
 145 150 155 160  
 Leu Ile Leu Gly Gln Met Asp Lys Pro Ser Leu Ile Phe Asp His Leu  
 165 170 175  
 Tyr Leu Gly Ser Glu Trp Asn Ala Ser Asn Leu Glu Glu Leu Gln Gly  
 180 185 190  
 Ser Gly Val Asp Tyr Ile Leu Asn Val Thr Arg Glu Ile Asp Asn Phe  
 195 200 205  
 Phe Pro Gly Leu Phe Ala Tyr His Asn Ile Arg Val Tyr Asp Glu Glu  
 210 215 220  
 Thr Thr Asp Leu Leu Ala His Trp Asn Glu Ala Tyr His Phe Ile Asn  
 225 230 235 240  
 Lys Ala Lys Arg Asn His Ser Lys Cys Leu Val His Cys Lys Met Gly  
 245 250 255  
 Val Ser Arg Ser Ala Ser Thr Val Ile Ala Tyr Ala Met Lys Glu Phe  
 260 265 270  
 Gly Trp Pro Leu Glu Lys Ala Tyr Asn Tyr Val Lys Gln Lys Arg Ser  
 275 280 285  
 Ile Thr Arg Pro Asn Ala Gly Phe Met Arg Gln Leu Ser Glu Tyr Glu  
 290 295 300  
 Gly Ile Leu Asp Ala Ser Lys Gln Arg His Asn Lys Leu Trp Arg Gln  
 305 310 315 320  
 Gln Thr Asp Ser Ser Leu Gln Gln Pro Val Asp Asp Pro Ala Gly Pro  
 325 330 335  
 Gly Asp Phe Leu Pro Glu Thr Pro Asp Gly Thr Pro Glu Ser Gln Leu  
 340 345 350  
 Pro Phe Leu Asp Asp Ala Ala Gln Pro Gly Leu Gly Pro Pro Leu Pro  
 355 360 365  
 Cys Cys Phe Arg Arg Leu Ser Asp Pro Leu Leu Pro Ser Pro Glu Asp  
 370 375 380  
 Glu Thr Gly Ser Leu Val His Leu Glu Asp Pro Glu Arg Glu Ala Leu  
 385 390 395 400  
 Leu Glu Glu Ala Ala Pro Pro Ala Glu Val His Arg Pro Ala Arg Gln  
 405 410 415  
 Pro Gln Gln Gly Ser Gly Leu Cys Glu Lys Asp Val Lys Lys Leu  
 420 425 430  
 Glu Phe Gly Ser Pro Lys Gly Arg Ser Gly Ser Leu Leu Gln Val Glu  
 435 440 445  
 Glu Thr Glu Arg Glu Glu Gly Leu Gly Ala Gly Arg Trp Gly Gln Leu  
 450 455 460  
 Pro Thr Gln Leu Asp Gln Asn Leu Leu Asn Ser Glu Asn Leu Asn Asn  
 465 470 475 480  
 Asn Ser Lys Arg Ser Cys Pro Asn Gly Met Glu Val Gly Arg Ala Arg  
 485 490 495  
 Pro Ala Gly Trp His Thr Pro Ser Leu Pro Ser His Ser Asn Trp Pro  
 500 505 510  
 Thr Ser Ala Ser Val Val Gly Thr Thr Gly Thr Arg His His Thr Gln  
 515 520 525  
 Leu Ile Phe Phe Tyr Cys Leu Leu Trp Ala Pro Ser Ser His Leu Gln  
 530 535 540  
 Gly Pro Glu Gly Ser Phe Thr Gly  
 545 550

<211> 10  
<212> PRT  
<213> Homo sapiens

<400> 16  
Val His Cys Lys Met Gly Val Ser Arg Ser  
1 5 10

<210> 17  
<211> 24  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Conserved homology region from eight DSPs having  
MAP-kinase phosphatase activity

<400> 17  
Asn Gly Arg Val Leu Val His Cys Gln Ala Gly Ile Ser Arg Ser Gly  
1 5 10 15  
Thr Asn Ile Leu Ala Tyr Leu Met  
20

<210> 18  
<211> 22  
<212> PRT  
<213> Homo sapiens

<400> 18  
Val Leu Val His Cys Lys Met Gly Val Ser Arg Ser Ala Ala Thr Val  
1 5 10 15  
Leu Ala Tyr Ala Met Lys  
20

<210> 19  
<211> 30  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Primer

<400> 19  
tgtcgatgaa gtcacggtag tgctggaggg 30

<210> 20  
<211> 1416  
<212> DNA  
<213> Mus musculus

<400> 20  
atggccctgg tcacagttag ccgttgcggcc cggggcagcg gcgcctccac gcccgtgggg 60  
ccctgggacc aggcgggtcca gcbaaggagt cgactccagc gaaggcagag ctggcggtg 120  
ctccgtgggg ctgtcctggg actgcaggat ggaggggaca atgatgtgc agcagaggcc 180

aggctctgagc	caacagagaa	ggccccgagt	gaggaggagc	tccacgggga	ccagacagac	240
ttcgggcaag	gatcccagag	tccccagaag	caggaggagc	agaggcagca	cctgcaccc	300
atggtacagc	tgctgaggcc	gcaggatgac	atccgcctgg	cagcccgact	ggaggcaccc	360
cggcctcccc	ggctccgcta	cctgctggta	gtttctacac	gagaaggaga	aggctgagc	420
caggatgaga	cggtcctcct	gggcgtggat	ttccctgaca	gcagctcccc	cagctgcacc	480
ctgggcctgg	tcttgcggct	ctggagtgac	acccaggtgt	acttagatgg	agacggggc	540
ttcagcgtga	cgtctggtgg	gcaaagccgg	atcttcaagc	ccatctccat	ccagaccatg	600
tgggccacac	tccaggtatt	gcaccaagca	tgtgaggcag	ctctaggcag	ccgccttgta	660
ccgggtggca	gtgcctcac	ctgggcacagc	cactaccagg	agagactgaa	ctccgaacag	720
agctgcctca	atagatggac	ggctatggcc	gacctggagt	ctctgcggcc	tcccagcggc	780
gagcctggcg	ggtcctcaga	acaggagcag	atggagcagg	cgatccgtgc	tgagctgtgg	840
aaagtgttgg	atgtcagtga	cctggagagt	gtcacttcca	aagagatccg	ccaggctctg	900
gagctgcgcc	tggggctccc	cctccagcag	taccgtgact	tcatgacaa	ccagatgctg	960
ctgctggtgg	cacagcggga	ccgagcctcc	cgcatacttcc	cccacctcta	cctgggctca	1020
gagtggaacg	cagcaaacct	ggaggagctg	cagaggaaca	gggtcaccca	catacttgaac	1080
atggcccccgg	agattgacaa	cttctaccct	gagcgttca	cctaccacaa	tgtgcgcctc	1140
tggatgagg	agtcgccca	gctgctgccc	caactggaaagg	agacgcaccg	tttcatttag	1200
gctgcaagag	cacagggcac	ccacgtgctg	gtccactgca	agatgggcgt	cagccgctca	1260
gcggccacag	tgctggctta	tgccatgaag	cagtacgaat	gcagcctgga	gcagggccctg	1320
cgccacgtgc	aggagctccg	gcccatcgcc	cgccccaaacc	ctggcttct	gcgccagctg	1380
cagatctacc	agggcatcct	gacggccaga	acctga			1416

<210> 21  
<211> 471  
<212> PRT  
<213> *Mus musculus*

<400> 21  
 Met Ala Leu Val Thr Val Ser Arg Ser Pro Pro Gly Ser Gly Ala Ser  
   1               5                           10                           15  
 Thr Pro Val Gly Pro Trp Asp Gln Ala Val Gln Arg Arg Ser Arg Leu  
   20               25   30  
 Gln Arg Arg Gln Ser Phe Ala Val Leu Arg Gly Ala Val Leu Gly Leu  
   35               40   45  
 Gln Asp Gly Gly Asp Asn Asp Asp Ala Ala Glu Ala Ser Ser Glu Pro  
   50               55                                   60  
 Thr Glu Lys Ala Pro Ser Glu Glu Glu Leu His Gly Asp Gln Thr Asp  
   65               70                           75                           80  
 Phe Gly Gln Gly Ser Gln Ser Pro Gln Lys Gln Glu Glu Gln Arg Gln  
   85               90   95  
 His Leu His Leu Met Val Gln Leu Leu Arg Pro Gln Asp Asp Ile Arg  
   100              105                           110  
 Leu Ala Ala Gln Leu Glu Ala Pro Arg Pro Pro Arg Leu Arg Tyr Leu  
   115              120                           125  
 Leu Val Val Ser Thr Arg Glu Gly Glu Gly Leu Ser Gln Asp Glu Thr  
   130              135                           140  
 Val Leu Leu Gly Val Asp Phe Pro Asp Ser Ser Pro Ser Cys Thr  
   145              150                           155                           160  
 Leu Gly Leu Val Leu Pro Leu Trp Ser Asp Thr Gln Val Tyr Leu Asp  
   165              170                           175  
 Gly Asp Gly Gly Phe Ser Val Thr Ser Gly Gly Gln Ser Arg Ile Phe  
   180              185                           190  
 Lys Pro Ile Ser Ile Gln Thr Met Trp Ala Thr Leu Gln Val Leu His  
   195              200                           205  
 Gln Ala Cys Glu Ala Ala Leu Gly Ser Gly Leu Val Pro Gly Gly Ser  
   210              215                           220  
 Ala Leu Thr Trp Ala Ser His Tyr Gln Glu Arg Leu Asn Ser Glu Gln

225	230	235	240
Ser Cys Leu Asn Glu Trp Thr Ala Met Ala Asp Leu Glu Ser Leu Arg			
245	250	255	
Pro Pro Ser Ala Glu Pro Gly Gly Ser Ser Glu Gln Glu Gln Met Glu			
260	265	270	
Gln Ala Ile Arg Ala Glu Leu Trp Lys Val Leu Asp Val Ser Asp Leu			
275	280	285	
Glu Ser Val Thr Ser Lys Glu Ile Arg Gln Ala Leu Glu Leu Arg Leu			
290	295	300	
Gly Leu Pro Leu Gln Gln Tyr Arg Asp Phe Ile Asp Asn Gln Met Leu			
305	310	315	320
Leu Leu Val Ala Gln Arg Asp Arg Ala Ser Arg Ile Phe Pro His Leu			
325	330	335	
Tyr Leu Gly Ser Glu Trp Asn Ala Ala Asn Leu Glu Glu Leu Gln Arg			
340	345	350	
Asn Arg Val Thr His Ile Leu Asn Met Ala Arg Glu Ile Asp Asn Phe			
355	360	365	
Tyr Pro Glu Arg Phe Thr Tyr His Asn Val Arg Leu Trp Asp Glu Glu			
370	375	380	
Ser Ala Gln Leu Leu Pro His Trp Lys Glu Thr His Arg Phe Ile Glu			
385	390	395	400
Ala Ala Arg Ala Gln Gly Thr His Val Leu Val His Cys Lys Met Gly			
405	410	415	
Val Ser Arg Ser Ala Ala Thr Val Leu Ala Tyr Ala Met Lys Gln Tyr			
420	425	430	
Glu Cys Ser Leu Glu Gln Ala Leu Arg His Val Gln Glu Leu Arg Pro			
435	440	445	
Ile Ala Arg Pro Asn Pro Gly Phe Leu Arg Gln Leu Gln Ile Tyr Gln			
450	455	460	
Gly Ile Leu Thr Ala Arg Thr			
465	470		

<210> 22  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Primer

<400> 22  
gccgcactgg aaggagacgc accg 24

<210> 23  
<211> 27  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Primer

<400> 23  
gcgccagctg cagatctacc agggcat 27

<210> 24  
<211> 28

```

<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 24
cactttccac agctcagcac ggatcgcc                                28

<210> 25
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 25
cgcagagact ccaggtcggc catagcc                                27

<210> 26
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 26
ggggttgagg gaagggggccg tgc                                    23

<210> 27
<211> 6
<212> PRT
<213> Homo sapiens

<400> 27
Asp Ala Asp Glu Tyr Leu
   1          5

<210> 28
<211> 2718
<212> DNA
<213> Homo sapiens

<400> 28
ccggtgtccag cccaggtgct cgcggcctgg ctccatggcc ctggtcacag tgagccgttc 60
gccccccggc agcggcgcct ccacgcccgt gggggccctgg gaccaggcgg tccagcgaag 120
gagtgcactc cagcgaaggc agagcttgc ggtgctccgt ggggctgtcc tgggactgca 180
ggatggaggg gacaatgatg atgcagcaga ggccagttct gagccaacag agaaggcccc 240
gagtgaggag gagctccacg gggaccagac agacttcggg caaggatccc agagtccccca 300
gaagcaggag gagcagaggc agcacctgca cctcatggta cagctgctga ggccgcagga 360
tgacatccgc ctggcagccc agctggaggc accccggcct ccccggtcc gctacctgct 420
ggtagttct acacgagaag gagaaggctc gagccaggat gagacggtcc tcctggcgt 480
ggatttccct gacagcagct ccccccagctg caccctggc ctggtcttgc ccctctggag 540
tgacacccag gtgtacttag atggagacgg gggcttcagc gtgacgtctg gtggcaaag 600

```

ccggatcttc aagccatct ccatccagac catgtggcc acactccagg tattgcacca 660  
 acatgtgag gcagctctag gcagcggcct tgtaccgggt ggcagtgc ccacccggc 720  
 cagccactac caggagagac tgaactccga acagagctgc ctcaatgaat ggacggctat 780  
 gcccgcacctg gagtctctgc ggcctcccg cgccgagcct ggcgggtcct cagaacagga 840  
 gcagatggag caggcgatcc gtgctgagct gtggaaagtgt ttggatgtca gtgacccgtga 900  
 gagtgtcact tccaaagaga tccgcccaggc tctggagctg cgcctggggc tccccctcca 960  
 gcagtaccgt gacttcatcg acaaccagat gctgctgctg gtggcacagc gggaccgagc 1020  
 ctcccgcatc ttccccacc tctacctggg ctcaatgtgg aacgcagcaa acctggagga 1080  
 gctgcagagg aacagggtca cccacatctt gaacatggcc cgggagattt acaacttcta 1140  
 ccctgagcgc ttcaccatacc acaatgtgc cctctggat gaggagtctg cccagctgt 1200  
 gccgcactgg aaggagacgc accgcttcat tgaggctgca agagcacagg gcacccacgt 1260  
 gctggtccac tgcaagatgg gcgtcagccg ctcaatggcc acatgtctgg cctatgccat 1320  
 gaagcgtac gaatgcagcc tggagcaggc ctcgcgcac gtgcaggagc tccggccat 1380  
 cggccgcccc aaccctggct tcctgcgcac gctgcagatc taccaggcga tcctgacggc 1440  
 cagccgcccag agccatgtct gggagcagaa agtgggtggg gtctcccaag aggagcaccc 1500  
 agccctgaa gtctctacac cattccacc tcttcgcac gaacctgagg gtgggggg 1560  
 ggagaagggtt gttaggatgg aagagagcca ggcagccccg aaagaagagc ctggccac 1620  
 gccacgtata aacctccgag gggatcatgag gtccatcgtt ctctggagc cctccttgaa 1680  
 gctggagagc acctcagaga ccagtgcacat gccagaggc ttctcttccc acgagtcttc 1740  
 acatgaagag cctctgcgc cttccacc gcttgcacagg accaaggag gccagcagg 1800  
 ggacaggggg ctcagcctg ccctgaagtc cgcgcgtca gtggttaccc tccagggcag 1860  
 tggcgtggtg gccaaccgga cccaggcctt ccaggagcag gaggcaggcagg 1920  
 gcagggagag ccctgcattt cctctacgc caggtccgg aagggtggta gacaggccag 1980  
 cgtgcgtac agtggagagg agggcggaggc ctgagccctc acacatgcac acgctccct 2040  
 gacactgaag aggtccaca actccttgaa gaaacaccct cacgtctttt gcccacaca 2100  
 ttccctctcgtac ctccggccca tacccgtcac tacagcctca cctccaccc ctgtcactac 2160  
 ggcctcacct cccacccctg tcactacagc ctcacccctt acagccttaa gtcccaaggcc 2220  
 catgtctgcc tgtccaaaggc ctcaagactt tctaactggg atgtggtaga gggactgaag 2280  
 gtacctttgg gggcaacagc accctagttt catttcacac tctagccctg cacactcacc 2340  
 tggcgtggcggg aatgaaaaca gagttcccg tgcaaaaagg gtcacgcctc ccaccccccgc 2400  
 cccctccctg cacctccctg ctcacccctt ttcatccctg gaaccagccca ggcaggccaa 2460  
 ccagtggccc ccaaaggcag gcaggatcct caggccccag ccgcgggagg ctggaaaggc 2520  
 tggcgtggcggg ctccctcat ccaccccttccac cgggtccaggt ctggatgtct gtcacccat 2580  
 ctccctgtgac accacgcggc atcacaggc accaggccag agatagttt cttttgtcc 2640  
 ttctggcct ctggcttagtc agttttcat agccttacag tatctggctt tgtactgaga 2700  
 aataaaacac attttcat 2718

<210> 29  
 <211> 2618  
 <212> DNA  
 <213> Homo sapiens

<400> 29

ccggatcttc cccagggtct cgcggcctgg ctccatggcc ctggtcacag tgagccgttc 60  
 gccccccggc agcggcgcct ccaccccggt gggccctgg gaccaggcgg tccagcgaag 120  
 gagtcgactc cagcgaaggc agagctttgc ggtgcctcggt gggctgtcc tggactgca 180  
 ggatggaggg gacaatgtat atgcagcaga ggcgcgtt ggcgcacag agaaggcccc 240  
 gagtcgggg ggcgcgtt gggaccagac agacttcggg caaggatccc agatccccca 300  
 gaagcgggg ggcgcgtt ggcgcgtt ggcgcgtt ggcgcgtt ggcgcgtt ggcgcgtt 360  
 tgacatccgc ctggcagccc agctggaggc accccggcct cccggctcc gtcacccat 420  
 ggtatccctt acacgagaag gagaagggtct ggcgcgtt ggcgcgtt tccctggcgt 480  
 ggatccctt gacagcgtt ccccgatgtt caccctggc ctggatgtcc ccctctggag 540  
 tgacatccgc gtgtacttag atggagacgg gggcttcgt ggcgcgtt ggcgcgtt 600  
 ccggatcttc aagccatct ccatccagac catgtggcc acactccagg tattgcacca 660  
 acatgtgag gcagctctag gcagcggcct tgtaccgggt ggcgcgtt tccacccggc 720  
 cagccactac caggagagac tgaactccga acagagctgc ctcaatgaat ggacggctat 780  
 gcccgcacctg gagtctctgc ggcctcccg cgccgagcct ggcgggtcct cagaacagga 840

gcagatggag caggcgatcc gtgctgagct gtggaaagtg ttggatgtca gtgacctgga 900  
 gagtgtcact tccaaagaga tccgccaggc tctggagctg cgcctgggc tccccctcca 960  
 gcagtaccgt gacttcatcg acaaccagat gctgctgctg gtggcacagc gggaccgagc 1020  
 ctccccgcatc ttccccacc tctacctggg ctcagagtgg aacgcagcaa acctggagga 1080  
 gctgcagagg aacagggtca cccacatctt gaacatggcc cgggagatg acaacttcta 1140  
 ccctgagcgc ttcacctacc acaatgtgcg cctctggat gaggagtgg cccagctgct 1200  
 gccgcactgg aaggagacgc accgcttcat tgaggctgca agagcacagg gcacccacgt 1260  
 gctggtccac tgcaagatgg gcgtcagccg ctcagcggcc acagtgtgg cctatgccat 1320  
 gaagcagttac gaatgcagcc tggagcaggc cctgcgccac gtgcaggagc tccggccat 1380  
 cggccgcccc aaccctggct tcctgcgcca gctgcagatc taccaggcga tcctgacggc 1440  
 cagaacctga gggtgtggg gaggagaagg ttgttaggcat ggaagagagc caggcagccc 1500  
 cggaaagaaga gcctggcca cggccacgta taaacctccg aggggtcatg aggtccatca 1560  
 gtcttctgga gcccctcttg gagctggaga gcacctcaga gaccagtgc atgcagagg 1620  
 tcttctcttc ccacgagtct tcacatgaag agcctctgca gcccttccca cagttgcaa 1680  
 ggaccaaggg aggccacgcg gtggacaggg ggcctcagcc tgcctctgaag tcccggcgt 1740  
 cagtggttac cctccaggc agtgcgtgg tggccaaaccg gacccaggcc ttccaggagc 1800  
 agagcaggg gcagggcag gggcaggag agccctgcatt tcctctactg cccaggttcc 1860  
 ggaagggttgtt gagacaggcc agcgtcactg acagtggaga ggaggcgcag gcctgagccc 1920  
 tcacacatgc ccacgctccc ctgacactga agaggatcca caactccttg gagaaacacc 1980  
 ctcacgtctg ttgccgcaca cattcctctc agctccgccc catacccgctc actacagcct 2040  
 cacctcccac ccctgtcact acggcctcac ctcccacccc tgtcaactaca gcctcacctc 2100  
 ctacagcctt aagtcccagg cccatgtctg cctgtccaag ggctcaagac ttcttaactg 2160  
 ggatgtggta gaggactga aggtacctt gggggcaaca gcaccctagt ttcatctca 2220  
 actctagccc tgcacactca cctgtggcac ggaataaaaa cagagcttcc cgtcaaaaaa 2280  
 ggtcacgcc tcccaccccc gccccctccc tgcacccctt gtcctctccc agttcattcc 2340  
 tgaaccagc caggccaggc aaccagtggc ccccaaaggc aggccaggatc ctcaggcccc 2400  
 agccgcggga ggctggaaagg gctggcagat cgcttccctc atccacctcc accgtccag 2460  
 gtctttgttctgttcccccac acctcctgtt acaccacgca agatcacagg gcaccaggcc 2520  
 agagatagtc ttcttttgttcccccac acctcctgtt acaccacgca agatcacagg gcaccaggcc 2580  
 agtatctggc tttgtactga gaaataaaaac acatttc 2618